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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,058	07/28/1999	MASANORI IWASAKI	P99.0922	6363

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EXAMINER
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LEE, RICHARD J

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 08/04/2004

26

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/362,058

Applicant(s)

IWASAKI, MASANORI

Examiner

Richard Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 1, line 13, "said object" shows no clear antecedent basis; and

(2) claim 2, line 27, "said object" shows no clear antecedent basis.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 5 are rejected under 35 U.S.C.103(a) as being unpatentable over Moreton et al of record (5,835,133) in view of Ishihara of record (5,737,084).

Moreton et al discloses an optical system for single camera stereo video as shown in Figures 2A, 2B, and 6, and the substantially the same three dimensional image capturing apparatus as claimed in claims 1 and 5, comprising the substantially the same single solid state image sensing device (i.e., 50 of Figure 2A, and see column 6, lines 36-62) having a plurality of image capturing regions (i.e., 50a, 50b of Figure 2A), each image capture region simultaneously captures a different image on the single solid state image sensing device (see column 6, lines 36-62); a plurality of optical systems (see 30a, 30b, 35, 40a, 40b, 45, 110, 210 of Figure 2A) for forming different images of a subject in the image capturing regions, each one of the optical systems corresponding to a different one of the image capturing regions (see column 6, lines 36-62), the optical systems including a plurality of reflection means (30a, 30b of Figure 2A) for

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reflecting rays from the subject a number of times, and at least a lens (i.e., 40a, 40b, 45 of Figure 2A) provided to be closer to the solid state image sensing device than the closest reflection means to the subject among the reflection means, wherein the reflection means and the lenses of the optical systems are used to form, in the corresponding image capturing regions, separate and different images of the subject which are captured from different viewpoints having a distance therebetween (see columns 5-6); and a signal processing means for dividing a video signal from the solid state image sensing device into video signals from the image capturing device into video signals representing the different images of the subject captured in the image capturing regions for capturing images of the subject from the different viewpoints (see 50a, 50b of Figure 2A, column 6, lines 36-62, and 70, 72 of Figure 6).

Moreton et al does not particularly disclose light shielding means provided at least between the single solid state image sensing device and the reflection means so as to separate the optical systems for forming the different images of the object and light limiting means provided to be closer to the subject than the reflection means for the  $(2n-1)$ -th reflection from the single solid state image sensing device along the optical systems, wherein the light limiting means prevent incidence of flux of ambient light other from rays forming each image of the subject as claimed in claim 1. However, Ishihara discloses a three dimension shape measuring apparatus as shown in Figure 8, and teaches the conventional light shielding means (i.e., 4 of Figure 1, column 1, lines 15-55, column 9, lines 5-22, column 11, lines 29-56) provided at least between the single solid state image sensing device (i.e., 5 of Figure 1) and the reflection means (i.e., 2 of Figure 1) so as to separate the optical systems for forming images of the object in the respective image capturing regions and light limiting means (i.e., 17, 19 of Figures 5 and 8, and see column

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9, lines 5-22, column 11, lines 29-56) provided to be closer to the subject (i.e., O of Figure 5) than the reflection means for the reflection from the single solid state image sensing device (i.e., 25 of Figure 5) along the optical systems, wherein the light limiting means prevent the incidence of flux of ambient light outer from rays forming the image of the subject. Therefore, it would have been obvious to one of ordinary skill in the art, having the Moreton et al and Ishihara references in front of him/her and the general knowledge of three dimensional image capturings, would have had no difficulty in providing the light shielding means of Ishihara between the single solid state image sensing device 50 of Moreton et al and the reflection means 30a, 30b of Moreton et al so as to separate the optical systems for forming the different images of the object in the respective image capturing regions and providing the light limiting means of Ishihara to be closer to the subject of Moreton et al than the reflection means 30a, 30b of Moreton et al for the (2n-1)-th reflection from the single solid state image sensing device 50 of Moreton et al along the optical systems for the same well known reduction of light rays from the subject purposes as claimed.

4. Claims 2 and 6 are rejected under 35 U.S.C.103(a) as being unpatentable over Moreton et al and Ishihara as applied to claims 1 and 5 in the above paragraph (2), and further in view of Tabata et al of record (6,177,952).

The combination of Moreton et al and Ishihara discloses substantially the same three dimensional image capturing apparatus as above, further including a plurality of imaging side reflection means (109, 209 of Figure 2B of Moreton et al) having reflectors provided to the obliquely outward, each one of the imaging side reflection means corresponding to one of a plurality of different portions of an image capturing region of the single solid state image sensing

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device, each portion of the image capturing region simultaneously captures a different image on the single solid state image sensing device (see columns 5-6 of Moreton et al); a plurality of subject side reflection means (30a, 30b of Figures 2A and 2B of Moreton et al) having reflectors provided outer from the imaging side reflection means so as to be oblique with respect to a subject, each one of the subject-side reflection means corresponding to a different one of the imaging-side reflection means, the subject side reflection means reflecting rays from the subject to the corresponding imaging side reflection means (see columns 5-6 of Moreton et al); a plurality of lenses or lens units (i.e., 40a, 40b, 45 of Figures 2A and 2B of Moreton et al) provided to be closer to the single solid state image sensing device than the subject side reflection means in optical paths formed from the subject to the different portions of the image capturing region so that rays from the subject to the different portions of the image capturing region are reflected by the imaging-side reflection means through the lenses or lens unit, each one of the lenses or lens units corresponding to a different one of the different portions of the image-capturing region (see columns 5-6 of Moreton et al); light shielding means provided at least between the single solid state image sensing device and the plurality of imaging side reflection means so as to separate the optical paths for forming the different images of the object in the respective image capturing regions (i.e., light shielding means 4 of Figure 1 of Ishihara as provided between the image sensing device 50 of Moreton et al and the plurality of image side reflection means 109, 209 of Moreton et al); and light limiting means provided to be closer to the subject than the subject-side reflection means for the  $(2n-1)$ -th reflection from the single solid state image sensing device along the optical paths, wherein the light limiting means prevent incidence of flux of ambient light outer from rays forming each image of the subject (i.e., light

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limiting means 17, 19 of Ishihara as provided to be closer to the subject of Moreton et al than the subject side reflection means 30a, 30b of Moreton et al).

The combination of Moreton et al and Ishihara does not particularly disclose, though, forming a plurality of different images of the subject which have parallax and a plurality of diaphragms, each one of the diaphragms corresponding to a different one of the lenses or lens unit, in which when each optical path has a lens, the diaphragms are provided to be closer to the subject than the corresponding lens and in which when each optical path has a lens unit, the diaphragms are provided to be closer to the subject than a lens of the corresponding lens unit, and wherein parallax which is the distance between the viewpoints is one centimeter or greater as claimed in claims 2 and 6. It is noted that Ishihara does teach the conventional use of diaphragms within the optical path of an imaging sensor (see 12 of Figure 8), and Tabata et al teaches the general stereoscopic imagings involving parallax caused by the images and from stereoscopic imagings (see column 6, lines 25-30, column 20, lines 8-14, and Figures 13A and 13B), which obviously could be one centimeter or greater as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Moreton et al, Ishihara, and Tabata et al references in front of him/her and the general knowledge of three dimensional imagings, would have had no difficulty in using the diaphragm imaging optics teachings of Ishihara and Tabata et al to provide each one of the diaphragms to a corresponding different one of the lens units within the three dimensional imaging system of Moreton et al as well recognizing that the images of the subject of Moreton et al results in a parallax effect in view of the parallax teachings of Tabata et al for the same well known three dimensional image capturing purposes as claimed.

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5. Due to the above new grounds of rejections, the Examiner wants to point out that only pertinent arguments from the amendment filed May 19, 2004 will now be addressed.

Regarding the applicant's arguments at pages 5-7 of the amendment filed May 19, 2004 concerning in general that "... unlike Applicant's claim 1, Ishihara's microlens array 17 and pinhole array 19 do not separate optical systems for forming different images. Instead, Ishihara's microlens array 17 and pinhole array 19 merely divide a light beam into multiple light beams ...", the Examiner wants to point out that: One cannot show non-obviousness by attacking references individually where, as here the rejections are based on combination of references. In re Keller, 208 USPQ 871 (CCPA 1981). It is submitted that it is considered obvious to provide the light shielding means of Ishihara between the single solid state image sensing device 50 of Moreton et al and the reflection means 30a, 30b of Moreton et al to thereby separate the optical systems of Moreton et al for forming the different images of the object in the respective image capturing regions, and thereby arriving at the claimed invention.

Regarding the applicant's arguments at pages 7-8 of the amendment filed May 19, 2004 concerning in general that the specification described the light shielding means as preventing optical cross-talk between the optical systems, the Examiner wants to point out that: The Specification is not the measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).



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6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any response to this final action should be mailed to:

Box AF  
Commissioner of Patents and Trademarks  
Washington, D.C. 20231

or faxed to:

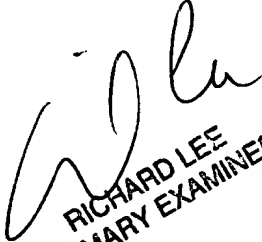
(703) 872-9314, (for formal communications; please mark "EXPEDITED PROCEDURE") (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

  
RICHARD LEE  
PRIMARY EXAMINER

Richard Lee/rl

7/29/04

